

What is Claimed is:

1. A mounting method for an optical member in which the optical member having a plurality of luminous flux converters formed in a line on a surface of an optical substrate is mounted on a support substrate having at least one groove, wherein

at least two parts of the side surfaces of the optical member are brought into contact with the groove to perform positioning, and

an adhesive agent is filled between at least one part of a portion which opposes the groove on the plane of the optical member and which is not in contact with the groove and the support substrate to cause the optical member and the support substrate to adhere to each other.

2. A mounting method for an optical member according to claim 1, wherein

the groove has an approximately trapezoidal sectional shape having both slanting side walls and a bottom having a small width,

the optical member has slanting surfaces opposing both the slanting side walls on both the sides,

at least one part of the slanting surfaces of the optical member is brought into contact with the slanting side walls of the groove to perform positioning, and

a surface of the optical member opposing the bottom of the groove is not in contact with the support substrate, and an adhesive agent is filled between the surface of the optical member opposing the bottom and the bottom.

3. A mounting method for an optical member according to claim 1, wherein

the optical member has overhanging portions which are formed for the respective luminous flux converters to overhang and to include edges respectively partially being along the peripheries of the plurality of luminous flux converters,

parts of the side surfaces of at least two of the overhanging portions are brought into contact with the groove to perform positioning, and

the overhanging portions other than the overhanging portions used in the positioning are accommodated in a groove formed in the support substrate without being in contact with the groove, and an adhesive agent is filled between at least one part of the side surfaces of the overhanging portions accommodated in the groove without being in contact with the groove and the support substrate.

4. A mounting method for an optical member according to claim 3, wherein

the overhanging portions used in the positioning are overhanging portions formed at both the ends of the line.

5. A mounting method for an optical member according to claim 3, wherein

the groove with which the overhanging portions used in the positioning are in contact are the same as the grooves in which the overhanging portions are accommodated and with which the overhanging portions are not in contact.

6. A mounting method for an optical member according to claim 3, wherein

the groove includes a plurality of grooves, and the groove with which the overhanging portions used in the positioning is in contact is

different from the groove in which the overhanging portions are accommodated and with which the overhanging portions are not in contact.

7. A mounting method for an optical member according to claim 3, wherein

the groove includes a plurality of grooves, and a groove with which the overhanging portion, of the overhanging portions used in the positioning, having two contact parts is in contact is different from a groove in which the overhanging portions are accommodated and with which the overhanging portions are not in contact.

8. An optical module comprising:

an optical member having a plurality of luminous flux converters formed in a line on a surface of an optical substrate; and

a support substrate having at least one groove for mounting an optical member, wherein

at least two parts of the side surfaces of the optical member are in contact with the groove and are used in positioning, and an adhesive agent is filled between at least one part of a portion which opposes the groove on the plane of the optical member and which is not in contact with the groove and the support substrate to cause the optical member and the support substrate to adhere to each other.

9. An optical module according to claim 8, wherein

the groove for mounting the optical member has an approximately trapezoidal sectional shape having both slanting side walls and a bottom having a small width,

the optical member has slanting surfaces opposing both the slanting side walls on both the sides,

at least one part of the slanting surfaces of the optical member is brought into contact with the slanting side walls of the groove for mounting the optical member and is used in positioning, and

a surface of the optical member opposing the bottom of the groove for mounting the optical member is not in contact with the support substrate, and an adhesive agent is filled between the surface of the optical member opposing the bottom and the bottom.

10. An optical module according to claim 8, wherein

the optical member has overhanging portions which are formed for the respective luminous flux converters to overhang and to include edges partially being along the peripheries of the plurality of luminous flux converters,

parts of the side surfaces of at least two of the overhanging portions are brought into contact with the groove for mounting the optical member to perform positioning, and

the overhanging portions other than the overhanging portions used in the positioning are accommodated in the groove for mounting the optical member without being in contact with the groove, and an adhesive agent is filled between at least one part of the side surfaces of the overhanging portions accommodated in the groove without being in contact with the groove and the support substrate.

11. An optical module according to claim 10, wherein

the overhanging portions used in the positioning are overhanging portions formed at both the ends of the line.

12. An optical module according to claim 10, wherein

the groove with which the overhanging portions used in the positioning are in contact are the same as the grooves in which the

overhanging portions are accommodated and with which the overhanging portions are not in contact.

13. An optical module according to claim 10, wherein

the groove for mounting the optical member includes a plurality of grooves, and the groove with which the overhanging portions used in the positioning is in contact is different from the groove in which the overhanging portions are accommodated and with which the overhanging portions are not in contact.

14. An optical module according to claim 10, wherein

the groove for mounting the optical member includes a plurality of grooves, and a groove with which the overhanging portion, of the overhanging portions used in the positioning, having two contact parts is in contact is different from a groove in which the overhanging portions are accommodated and with which the overhanging portions are not in contact.

15. An optical module according to claim 10, further comprising:

a plurality of optical fibers;

a plurality of optical devices each having a light-emitting or light-receiving function; wherein

the support substrate further includes a plurality of grooves for mounting optical fibers arranged in parallel to each other,

the plurality of optical fibers are mounted in the grooves for mounting the plurality of optical fibers, respectively, and

at least one combination obtained by optically coupling one of the optical fibers with one of the optical devices through at least one of the luminous flux converters is formed.

16. An optical module according to claim 15, wherein

the number of luminous flux converters, the number of optical fibers, the number of optical devices are equal to each other.

17. An optical module according to claim 15, wherein at least one of the grooves for mounting the optical member communicates with at least two of the grooves for mounting the optical fibers.

18. An optical module according to claim 15, wherein the groove with which the overhanging portions used in the positioning are in contact is the same as the groove in which the overhanging portions are accommodated and with which the overhanging portions are not in contact, and communicate with all the grooves for mounting the optical fibers.

19. An optical module according to claim 15, wherein the groove for mounting the optical member includes a plurality of grooves,

the number of grooves for mounting the optical fibers are at least three,

a groove with which the overhanging portion, of the overhanging portions used in the positioning, having two contact parts is in contact is different from the groove in which the overhanging portions are accommodated and with which the overhanging portions are not in contact,

the groove with which the overhanging portion, of the overhanging portions used in the positioning, having two contact parts is in contact communicates with one of the grooves for mounting the optical fibers, and

the groove in which the overhanging portions are accommodated

and with which the overhanging portions are not in contact communicates with the plurality of the grooves for mounting optical fibers.

20. An optical module according to claim 15, wherein the optical member includes a plurality of optical members which are arranged in parallel to each other.

21. An optical module according to claim 8, wherein the optical member is constituted by a silicon substrate.

22. An optical module according to claim 8, wherein the support substrate is constituted by a silicon substrate.

23. An optical module according to claim 8, wherein the luminous flux converter is constituted by a diffractive optical device.

24. An optical module according to claim 8, wherein the luminous flux converter is a lens.